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Coronary Heart Disease

Coronary heart disease (CHD) is the most common form of heart disease, the leading cause of death for Americans. About 12.6 million Americans suffer from CHD, which often results in a heart attack. About 1.1 million Americans suffer a heart attack each year—about 515,000 of these heart attacks are fatal.

Fortunately, CHD can be prevented or controlled. This fact sheet gives an overview of CHD and its prevention, diagnosis, and treatment. It describes the steps that Americans can take to protect their heart health.

WHAT IS CHD?

The heart is a muscle that works 24 hours a day. To perform well, it needs a constant supply of oxygen and nutrients, which is delivered by the blood through the coronary arteries.

That blood flow can be reduced by a process called atherosclerosis, in which plaques or fatty substances build up inside the walls of blood vessels. The plaques attract blood components, which stick to the inside surface of the vessel walls.

Atherosclerosis can affect any blood vessels and causes them to narrow and harden. It develops over many years and can begin early, even in childhood.

In CHD, atherosclerosis affects the coronary arteries. The fatty buildup, or plaque, can break open and lead to the formation of a blood clot. The clot covers the site of the rupture, also reducing blood flow. Eventually, the clot becomes firm. The process of fatty buildup, plaque rupture, and clot formation recurs, progressively narrowing the arteries. Ever less blood reaches the heart muscle.

When too little blood reaches a part of the body, the condition is called ischemia. When this occurs with the heart, it's called cardiac ischemia. If the blood supply is nearly or completely, and abruptly, cut off, a heart attack results and cells in the heart muscle that do not receive enough oxygen begin to die. The more time that passes without treatment to restore blood flow, the greater the damage to the heart. Because heart cells cannot be replaced, the cell loss is permanent.

WHO GETS CHD?

Certain behaviors and conditions increase the risk that someone will develop CHD (see Box 1). They also can increase the chance that CHD, if already present, will worsen. They are called "risk factors" and, while some cannot be modified, most can.

Risk factors that cannot be modified are: age (45 or older for men; 55 or older for women) and a family history of early CHD (a father or brother diagnosed before age 55, or a mother or sister diagnosed with heart disease before age 65).

Factors that can be modified are: cigarette smoking, high blood cholesterol, high blood pressure, overweight/obesity, physical inactivity, and diabetes.

Risk factors do not add their effects in a simple way. Rather, they multiply each other's effects. Generally, each risk factor alone doubles a person's chance of developing CHD. Someone who has high blood cholesterol and high blood pressure, and smokes cigarettes is eight times more likely to develop CHD than someone who has no risk factors. So, *it is important to prevent or control risk factors that can be*



modified—see “Lifestyle” section on page 4 for how to do this.

WHAT ARE THE SYMPTOMS OF CHD?

Symptoms of CHD vary. Some persons feel no discomfort, while others have chest pain or shortness of breath. Sometimes, the first symptom of CHD is a heart attack or cardiac arrest (a sudden, abrupt loss of heart function).

Chest pain also can vary in its occurrence. It happens when the blood flow to the heart is critically reduced and does not match the demands placed on the heart. Called angina, the pain can be mild and intermittent, or more pronounced and steady. It can be severe enough to make normal everyday activities difficult. The same inadequate blood supply also may cause no symptoms, a condition called silent ischemia.

Often, particularly in men, angina is felt behind the breastbone and may radiate up the left arm or neck. It may also be felt in the shoulder, elbows, jaw, or back. Angina is usually brought on by exercise, lasts 2 to 5 minutes,

does not change with breathing, and is eased by rest.

Women may get a less typical form of angina that feels like shortness of breath or indigestion, and can linger or occur in a different location than behind the breastbone. This less typical form may not be brought on by exertion or be eased by rest. In fact, it may occur only at rest.

A person who has any symptoms should talk with his or her doctor. Without treatment, the symptoms may return, worsen, become unstable, or progress to a heart attack.

WHAT TO DO IN A HEART ATTACK

Those with CHD should talk with their doctor about the symptoms of a heart attack (see Box 2) and the appropriate steps to take to get emergency care. The key to surviving a heart attack is fast action. Learn the heart attack warning signs and, if you or someone else experiences any of them, call 9-1-1 fast. Do not wait for more than a few minutes—5 minutes at most.

Fast treatment is critical: Treatments to restore blood flow to the heart are most effective if given within 1 hour of the start of symptoms. The sooner treatment is begun, the greater the chance for survival and a full recovery.

Warning signs of a heart attack are: Discomfort or pain in the center of the chest; discomfort in the arm(s), back, neck, jaw, or stomach; shortness of breath; and breaking out in a cold sweat, nausea, or light-headedness.

The most common warning sign—chest discomfort—is the same for men and women. However, women are somewhat more likely than men to have some of the other common symptoms, particularly shortness of breath, nausea and vomiting, and back or jaw pain. Also, women tend to be about 10 years older than men when they have a heart attack and to have other conditions as well, such as diabetes, high blood pressure, and congestive heart failure. So it is vital that women receive treatment fast.

Calling 9-1-1 is the best way to get fast treatment. It is like bringing the hospital to you. Emergency medical personnel can begin treatment immediately—even before arrival at the hospital. They also have equipment to start the heart beating if it stops during the heart attack. And patients who use the ambulance tend to receive faster treatment on their arrival at the hospital.

If for some reason, you are having heart attack symptoms and cannot call 9-1-1, have someone else drive you at once to the hospital. Never drive yourself to the hospital, unless you absolutely have no other choice.

Box 1 CHD RISK FACTORS

Risk factors are behaviors or conditions that increase the chance of developing a disease. For CHD, there are two types of risk factors—those that cannot be modified and those that can. Most CHD risk factors can be modified. Check the lists below:

CAN BE MODIFIED:

- Cigarette smoking
- High blood pressure
- High blood cholesterol
- Overweight/obesity
- Physical inactivity
- Diabetes

CANNOT BE MODIFIED:

- Age—45 and older for men; 55 and older for women
- Family history of early CHD—father or brother diagnosed before age 55; mother or sister diagnosed before age 65

Box 2 HEART ATTACK WARNING SIGNS

When a heart attack happens, every minute counts. Know the warning signs:

- Chest discomfort. Most heart attacks involve discomfort in the center of the chest that lasts for more than a few minutes, or goes away and comes back. The discomfort can feel like uncomfortable pressure, squeezing, fullness, or pain.
- Discomfort in arm(s), back, neck, jaw, or stomach.
- Shortness of breath. Often comes along with chest discomfort. But it also can occur before chest discomfort.
- Cold sweat, nausea, or light-headedness.

Most heart attacks are not sudden and intense, but start slowly, with only mild pain or discomfort. It may not be clear what's wrong—even for those who have had a heart attack before. Signs can change for each attack. So, when in doubt, check it out. **Don't wait more than a few minutes—5 at most—to call 9-1-1.** Fast action can save lives.

You also can increase your chance of surviving a heart attack by preparing ahead of time, especially if you have CHD. Talk with your doctor about what to do if you experience any warning signs and how to reduce your heart attack risk. Fill out the heart attack survival plan (see Box 3) and keep it in handy places, such as your wallet or purse. Make sure your family and friends know about the warning signs and to call 9-1-1 within 5 minutes.

WHAT ARE THE TESTS FOR CHD?

There is no single, simple test for CHD. Which diagnostic tests are done depends on a number of factors, especially the severity of the symptoms and the likelihood that their cause is CHD. After taking a careful medical history and doing a physical examination, the doctor may use some of the following tests to rule out other causes for the symptoms, and to confirm the presence and check the severity of CHD:

■ *Electrocardiogram (ECG or EKG).* This is a graphic record of the electrical activity of the heart as it contracts and relaxes. The ECG can detect abnormal heartbeats,

some areas of damage, inadequate blood flow, and heart enlargement.

■ *Stress test.* The stress test is used to check for problems that show up only when the heart is working hard. There are different types of stress test. One is called the exercise test (also called a treadmill test or bicycle exercise ECG); another uses a drug instead of exercise to increase blood flow. The latter is used for persons, such as those with arthritis, who cannot exercise. In both cases, the blood pressure and heartbeat response are continuously monitored and periodically recorded. An ECG rate and blood pressure are taken before, during, and after the test. For an exercise stress test, breathing and oxygen consumption also may be measured.

Still another type of stress test uses a nuclear scan (see next bullet) to assess heart muscle contraction or blood flow in the heart.

Stress tests are useful but not 100 percent reliable. False positives (showing a problem where none exists) and false negatives (showing no problem when something is wrong) can occur. For instance, gender and race can affect the measurements of exercise stress tests.

■ *Nuclear scan.* This also is called a thallium stress test. It is sometimes used to show areas of the heart that lack blood flow and are damaged, as well as problems with the heart's pumping action. A small amount of a radioactive material called thallium is injected into a vein, usually in the arm. A scanning camera positioned over the heart records whether the nuclear material is taken up by the heart muscle (healthy areas) or not (damaged areas). The camera also can evaluate how well the heart muscle pumps blood. This test can be done during both rest and exercise, enhancing the usefulness of its results.

■ *Coronary angiography (or arteriography).* This test is used to detect blockages and narrowed areas inside coronary arteries. A fine tube (catheter) is threaded through an artery of an arm or leg into position in the heart vessel. A dye that shows up on x ray is then injected into the blood vessel, and the vessels and heart are filmed as the heart pumps. The picture is called an angiogram or arteriogram.

■ *Ventriculogram.* This is a picture of the heart's main pumping chamber, the left ventricle. It

Box 3 HEART ATTACK SURVIVAL PLAN

Fill in the information below. Keep this form in a handy place. You may want to photocopy it and keep a copy at home, at work, and in your wallet or purse. Share the information with emergency medical personnel and hospital staff.

Medicines you are taking:

1. _____
2. _____
3. _____

Medicines you are allergic to:

1. _____
2. _____
3. _____

If symptoms stop completely in less than 5 minutes, you should still call your health care provider:

Phone number during office hours: _____

Phone number after office hours: _____

Person to contact if you go to the hospital:

Name: _____

Home phone: _____ Work phone: _____

is taken by following a procedure similar to the one described for an angiogram. For a ventriculogram, the catheter is positioned in the left ventricle.

■ **Intracoronary ultrasound.** This uses a catheter that can measure blood flow. It gives a picture of the coronary arteries that shows the thickness and character of the artery wall. This lets the doctor assess blood flow and blockages.

How Is CHD TREATED?

There are three main types of treatment for CHD: lifestyle, medication, and, for advanced atherosclerosis, special procedures. The first two types of treatment also can help prevent the development of CHD. A discussion of each type of treatment follows.

Lifestyle

Six key steps can help prevent or control CHD: stop smoking cigarettes, lower high blood pressure, reduce high blood cholesterol,

lose extra weight, become physically active, and manage diabetes.

Here's more on each step:

■ **Cigarette smoking.** There is no safe way to smoke. Although low-tar and low-nicotine cigarettes may somewhat reduce the risk for lung cancer, they do not lessen the risk for CHD. In fact, smoking accelerates atherosclerosis. It also increases the risk for stroke.

The risk for CHD increases along with the number of cigarettes smoked daily. Quitting sharply lowers the risk, even in the first year and no matter what a person's age. Quitting also reduces the risk for a second heart attack in those who have already had one.

The U.S. Food and Drug Administration has approved five medications that can help persons stop smoking and lessen the urge to smoke. These are: Bupropion SR (available only by prescription), which has no nicotine and reduces the craving for cigarettes; nicotine supplements, which

include gum (available over the counter); a nicotine patch (available both over the counter and by prescription); a nicotine inhaler (available only by prescription); and a nicotine nasal spray (available only by prescription).

For more about how to stop smoking, check the Virtual Office of the U.S. Surgeon General at www.surgeongeneral.gov/tobacco.

■ **High blood pressure.** Also known as hypertension, high blood pressure usually has no symptoms. Once developed, it typically lasts a lifetime. If uncontrolled, it can lead to heart and kidney diseases, and stroke.

Blood pressure is given as two numbers—the systolic pressure over the diastolic pressure—and both are important. A measurement of 140/90 mmHg (millimeters of mercury) or above is called high blood pressure—but if either number is high, that too is hypertension. A healthy blood pressure is around 120/80.

Lifestyle steps often can prevent or control high blood pressure:

lose excess weight, become physically active, follow a healthy eating plan, including foods lower in salt and sodium, and limit alcohol intake. Some of these steps are the same as those needed to reduce the risk for CHD and are discussed later.

A key ingredient of healthy eating is choosing foods lower in salt (sodium chloride) and other forms of sodium. Most Americans should consume no more than 2,400 milligrams of sodium (which equals about 6 grams of salt, or about 1 teaspoon) in a day. This is the amount listed as a Daily Value on the Nutrition Facts label on food items. Recent research shows that it's even better to consume no more than 1,500 milligrams of sodium (which equals about 4 grams of salt, or about 2/3 teaspoon) in a day. This includes ALL salt—that in processed foods or added in cooking or at the table.

An overall eating plan also should be low in saturated fat and cholesterol, and moderate in total fat. It also should include plenty of fruits and vegetables—most are naturally low in salt and calories.

One such healthy eating plan has been shown to reduce elevated blood pressure. It's called the DASH diet. DASH stands for Dietary Approaches to Stop Hypertension. The eating plan emphasizes fruits, vegetables, and lowfat dairy products. It is reduced in red meat, sweets, and sugar-containing drinks. It is rich in potassium, calcium, magnesium, fiber, and protein. See "For More Information" on page 8 to find out how to get more details about the DASH Diet.

Those who consume alcoholic beverages should do so in moderation. Alcoholic beverages supply calories but few nutrients. They are harmful when consumed in excess, and some persons should not drink at all. Furthermore, drinking alcoholic beverages increases the risk of some serious health problems. For example, even one drink a day can slightly raise the risk of breast cancer. While drinking alcoholic beverages in moderation may lower the risk of CHD—mainly among men over age 45 and women over age 55—there are other factors that reduce the risk of heart disease. These include a healthy diet, physical activity, avoidance of smoking, and maintenance of a healthy weight.

Moderate drinking is defined as no more than two drinks a day for men and no more than one drink a day for women. One drink equals 1.5 ounces of 80-proof whiskey, or 5 ounces of wine, or 12 ounces of beer (regular or light).

Those who drink alcoholic beverages should be aware that they may affect medications taken. They should check about this with their doctor or pharmacist.

■ *High blood cholesterol.*

Cholesterol is a soft, waxy substance involved in normal cell function. Normally, the body makes all the cholesterol it needs. Excess saturated fat and cholesterol in the diet cause the fatty buildup in blood vessels, which contributes to atherosclerosis.

Cholesterol travels through the blood in packages called lipoproteins. There are two main types of lipoprotein that affect the risk for CHD: low-density lipoprotein

(LDL), also called the "bad" cholesterol, which causes deposits in blood vessels; and high-density lipoprotein (HDL), also called the "good" cholesterol, which helps remove cholesterol from the blood. It's important to have a low level of LDL and a high level of HDL.

Healthy adults age 20 and older should have a lipoprotein analysis once every 5 years to measure their levels of total cholesterol, LDL, HDL, and triglycerides, another fatty substance in the blood.

To help prevent or control high blood cholesterol, follow a healthy eating plan such as that mentioned previously, become physically active, and lose excess weight. Those who already have CHD should be especially careful to control their cholesterol and may need to follow an eating plan more restricted in saturated fat and cholesterol.

■ *Overweight/obesity.* About 65 percent of American adults are overweight or obese. Being overweight or obese increases the risk not only for heart disease, but also for other conditions, including stroke, gallbladder disease, arthritis, and breast, colon, and other cancers.

Overweight and obesity are determined by two key measures—body mass index, or BMI, and waist circumference. BMI relates height to weight. (See Box 4 for how to calculate BMI.) A normal BMI is 18.5-24.9; an overweight BMI is 25-29.9; and an obese BMI is 30 and over. For waist circumference, heart disease risk increases if it is greater than 35 inches for women or greater than 40 inches for men.

Those who are overweight or obese should aim for a healthy weight in order to reduce CHD risk. Even a small weight loss—just 10 percent of current weight—will help to lower CHD risk and that of the other conditions too. Those who cannot lose should at least try not to gain more weight.

There are no quick fixes to lose weight. To be successful, weight loss must be viewed as a change of lifestyle and not as a temporary effort to drop pounds quickly. Otherwise, the weight will probably be regained. Do not try to lose more than 1/2 to 2 pounds a week.

To lose weight, follow a heart-healthy eating plan. Eat a variety of nutritious foods in moderate amounts. Choose foods that are lower in calories and fat. It's also important to become physically active. This helps use calories and, so, aids weight loss. It also helps keep the weight off for life.

■ *Physical activity.* Physical activity is one of the best ways to help prevent and control CHD. It can lower LDL and raise HDL. It also lowers blood pressure for those who are overweight.

To become physically active, do 30 minutes of a moderate activity on most and, preferably, all days. Examples of moderate activities are brisk walking and dancing. If 30 minutes is too much time, break it up into periods of at least 10 minutes each. Those who have been inactive should start slowly. Begin at a lower level of physical activity and slowly increase the time and intensity of the effort.

Those with CHD or who have a high risk for it should check with

their doctor before starting a physical activity program. Others who should consult a doctor first include those with chronic health problems, men over age 40, and women over age 50. The doctor can give advice on how rigorous the exercise should be.

Those who have had a heart attack benefit greatly from physical activity. Many hospitals have a cardiac rehabilitation program. The doctor can offer advice about a suitable program.

■ *Diabetes.* Diabetes mellitus affects more than 17 million Americans. It damages blood vessels, including the coronary arteries of the heart. Up to 75 percent of those with diabetes develop heart and blood vessel diseases. Diabetes also can lead to stroke, kidney failure, and other problems.

Diabetes occurs when the body is not able to use sugar as it should for growth and energy. The body gets sugar when it changes food into glucose (a form of sugar). A hormone made in the pancreas and called insulin is needed for the glucose to be taken up and used by the body. In diabetes, the body cannot make use of the glucose in the blood because either the pancreas cannot make enough insulin or the insulin that is available is not effective.

Symptoms of diabetes include: increased thirst and urination (including at night), weight loss, and blurred vision, hunger, fatigue, frequent infections, and slow healing of wounds or sores.

There are two main types of diabetes—type 1 and type 2. Type 1 usually appears suddenly and most commonly in those under age 30. Type 2 diabetes occurs

gradually and most often in those over age 40. Up to 95 percent of those with diabetes have type 2.

You're more likely to develop type 2 if you are overweight or obese, especially with extra weight around the middle, over age 40, or have high blood pressure or a family history of diabetes. Diabetes is particularly prevalent among African Americans, Asians, and American Indians.

Because of the link with heart disease, it's important for those with diabetes to prevent or control heart disease and its risk factors (see Box 1). Fortunately, new research shows that the same steps that reduce the risk of CHD also lower the chance of developing type 2 diabetes. And, for those who already have diabetes, those steps, along with taking any prescribed medication, also can delay or prevent the development of complications of diabetes, such as eye or kidney disease and nerve damage.

According to the research, a 7 percent loss of body weight and 150 minutes of moderate physical activity a week can reduce the chance of developing diabetes by 58 percent in those who are at high risk. The lifestyle changes cut the risk of developing type 2 diabetes regardless of age, ethnicity, gender, or weight.

Steps that reduce the risk of developing diabetes—as well as CHD—are to:

- Follow a healthy eating plan, which is low in saturated fat and cholesterol, and moderate in total fat.
- Aim for a healthy weight.
- Be physically active each day—30 minutes of moderate

Box 4 FIND YOUR BMI

Here is a shortcut way to calculate your BMI:

Example: A person who is 5 feet 5 inches tall and weighs 180 lbs.

1	Multiply your weight in pounds by 703	180 x 703	=	126,540	
2	Divide the answer in step 1 by height in inches (Round to the nearest whole number.)	126,540/65	=	1,947	
3	Divide the answer in step 2 by height in inches to get your BMI	1,947/65	=	30	= BMI

physical activity on most and, preferably, all days of the week.

- Not smoke.
- Prevent or control high blood pressure.
- Prevent or control high blood cholesterol.

Those who already have diabetes can delay its progression, or prevent or slow the development of heart, blood vessel, and other complications by following the steps given above as well as to:

- Eat meals and snacks at around the same times each day.
- Check with the doctor about the best physical activities.
- Take prescribed medicine for diabetes at the same times each day.
- Check blood sugar every day. Each time blood sugar is checked, the number should be written in a record book. The doctor should be called if the numbers are too high or too low for 2 to 3 days.
- Check the feet every day for cuts, sores, bumps, or red spots.
- Brush and floss teeth and gums every day.
- Take any prescribed medication for other conditions, such as CHD.

- For those who have CHD, check with the doctor about whether or not to take aspirin each day.

Medications

Sometimes, in addition to making lifestyle changes, medications may be needed to prevent or control CHD. For instance, medications may be used to control a risk factor such as high blood pressure or high blood cholesterol and so help prevent the development of CHD. Or, medication may be used to relieve the chest pain of CHD.

If prescribed, medications must be taken as directed. Drugs can have side effects. If side effects occur, they should be reported to the doctor. Often, a change in the dose or type of a medication, or the use of a combination of drugs, can stop the side effect.

Drugs used to treat CHD and its risk factors include:

- *Aspirin*—helps to lower the risk of a heart attack for those who have already had one. It also helps to keep arteries open in those who have had a previous heart bypass or other artery-opening procedure such as coronary angioplasty (see next section).

Because of its risks, aspirin is not approved by the Food and Drug

Administration for the prevention of heart attacks in healthy persons. It may be harmful for some persons, especially those with no risk of heart disease. Patients must be assessed carefully to make sure the benefits of taking aspirin outweigh the risks. Each person should talk to his or her doctor about whether or not to take aspirin.

Aspirin also is given to patients who arrive at a hospital emergency department with a suspected heart attack.

- *Digitalis*—helps the heart contract better and is used when the heart's pumping function has been weakened; it also slows some fast heart rhythms.

- *ACE (angiotensin converting enzyme) inhibitor*—stops production of a chemical produced by the body that makes blood vessels narrow. It is used for high blood pressure and damaged heart muscle. It also can prevent kidney damage in some patients with diabetes.

- *Beta blocker*—slows the heart and makes it beat with less force, lowering blood pressure and making the heart work less hard. It is used for high blood pressure, chest pain, and to prevent a repeat heart attack.

■ *Nitrate (including nitroglycerine)*—relaxes blood vessels and stops chest pain/angina.

■ *Calcium-channel blocker*—relaxes blood vessels, and is used for high blood pressure and chest pain/angina.

■ *Diuretic*—decreases fluid in the body and is used for high blood pressure. Diuretics are sometimes referred to as “water pills.”

■ *Blood cholesterol-lowering agents*—decrease LDL levels in the blood. Some can increase HDL.

■ *Thrombolytic agents*—also called “clot-busting drugs,” they are given during a heart attack to dissolve a blood clot in a coronary artery in order to restore blood flow. They must be given immediately after heart attack symptoms begin. To be most effective, they need to be given within 1 hour of the start of heart attack symptoms.

Special Procedures

Advanced atherosclerosis may require a special procedure to open an artery and improve blood flow. This is usually done to ease severe chest pain, or to clear major or multiple blockages in blood vessels.

Two commonly used procedures are coronary angioplasty and coronary artery bypass graft operation:

■ *Coronary angioplasty, or balloon angioplasty.* In this procedure, a fine tube, or catheter, is threaded through an artery into the narrowed heart vessel. The catheter has a tiny balloon at its tip. The balloon is repeatedly inflated and deflated to open and stretch the artery, improving blood flow. The balloon is then deflated, and the catheter is removed.

Doctors often insert a stent during the angioplasty. A wire mesh tube, the stent is used to keep an artery open after an angioplasty. The stent stays in the artery permanently.

Angioplasty is not surgery. It is done while the patient is awake and may last 1 to 2 hours.

In about a third of those who have an angioplasty, the blood vessel becomes narrowed or blocked again within 6 months. Vessels that reclose may be opened again with another angioplasty or a coronary artery bypass graft. An artery with a stent also can reclose.

■ *Coronary artery bypass graft operation.* Also known as “bypass surgery,” the procedure uses a piece of vein taken from the leg, or of an artery taken from the chest or wrist. This piece is attached to the heart artery above and below the narrowed area, thus making a bypass around the blockage. Sometimes, more than one bypass is needed.

Bypass surgery may be needed due to various reasons, such as an angioplasty that did not sufficiently widen the blood vessel, or blockages that cannot be reached by, or are too long or hard for, angioplasty. In certain cases, bypass surgery may be preferred to angioplasty. For instance, it may be used for persons who have both CHD and diabetes.

A bypass also can close again. This happens in about 10 percent of bypass surgeries, usually after 10 or more years.

Other procedures also may be used to open coronary arteries:

■ *Atherectomy.* A specially equipped catheter is threaded

through an artery to a blockage, where thin strips of plaque are shaved off and removed. Balloon angioplasty or insertion of a stent may be done as well.

■ *Laser angioplasty.* A catheter with a laser tip is inserted into an artery to burn, vaporize, or break down plaque. The procedure may be used alone or along with balloon angioplasty.

It is important to understand that these procedures relieve the symptoms of CHD but do not cure the disease. Lifestyle changes must still be followed and any necessary medications must continue to be taken.

FOR MORE INFORMATION

The National Heart, Lung, and Blood Institute (NHLBI) has more information about CHD, its risk factors, the DASH diet, and related topics. To get materials, contact:

NHLBI Health Information Center
P.O. Box 30105
Bethesda, MD 20824-0105
phone (301) 592-8573
fax (301) 592-8563
TTY (240) 629-3255

Many materials are available free online at www.nhlbi.nih.gov.



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